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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/020,937	12/19/2001	Dong June Kim	MRE-0047	2861

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FLESHNER & KIM, LLP  
P.O. BOX 221200  
CHANTILLY, VA 20153

EXAMINER
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CHIN, PAUL T

ART UNIT	PAPER NUMBER
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3652

DATE MAILED: 11/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/020,937	Applicant(s) KIM, DONG JUNE	
	Examiner PAUL T. CHIN	Art Unit 3652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 08 September 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. The amendment filed September 8, 2004, and the arguments presented therewith have been carefully considered. Regarding Asia et al. (6,012,222), they are persuasive (with regards to claims 2-4 and 10-12) and therefore, the claims 2-4 and 10-12 have been withdrawn. However, claims 1,5-9,13, and 14 remain rejected based upon a new ground of rejection. Moreover, a new ground(s) of rejection is further made in view of new references, the Japanese Patent (JP 63-162129) and Kaiser, Jr. et al. (5,741,174). A non-final office action follows as below.

#### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claimed language of the phrases "*a motor ..... transmitting the rotary force to a rotation central axis*" (claim 1, lines 2-3), "*the first coupling is connected between the rotation central axis of the motor and the ball spline nut*" (claim 3, lines 2-3) and "*to maintain a predetermined distance m between the rotation central axis and the ball spline nut*" (claim 3, lines 3-4) are vague and indefinite. It is unclear as to how the "motor" will transmit the rotary force to "the rotary central axis. It is pointed out that the means of the word "axis" are defined as "*a center line to which parts of a structure or body may be referred; an imaginary line to which elements of a work of art, such as a picture, are referred for measurement or symmetry*" according to *The American Heritage® Dictionary of the English Language, Third Edition*. It is understood that the

first coupling is connected between the motor and the ball spline nut to maintain a predetermine distance m between the motor and the ball spline nut. However, the claimed languages of "connected between the rotation central axis of the motor" or "distance m between the rotation central axis" are incorrect because the "axis of the rotation of the motor" is in the center line of the rotating motor and the "axis", which is an imaginary line, can not be connected the "ball spline nut". The distance m as shown in figure 5 is between the distal end of the motor's shaft and the upper end of the ball spline unit. Moreover, there is no antecedent basis for "the ball spline nut" (claim 5, line 2). Claim 1 recites only "a ball spline unit" in line 4.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-14, as best understood, are rejected under 35 U.S.C. 102(b) as being anticipated by the Japanese Patent (JP 63-162129).

The Japanese Patent (JP 63-162129) discloses a device comprising a rotation unit, or a motor (5) configured for generating a rotary force and transmitting the rotatory force; a ball spline unit (7,8) configured for performing a rotation movement and a vertical reciprocation movement by the rotary force generated from the motor; a rotation shaft unit comprising a rotation shaft (11), wherein the rotation shaft unit is configured to be moved in a vertical direction and rotated for mounting part (13); and a plurality of couplings (see Exhibit A) configured for transmitting the rotary force of the rotation

central axis to the ball spline unit and for transmitting a rotary force of the ball spline unit to the rotation shaft unit.

Re claims 2 and 6, the Japanese Patent (JP 63-162129) shows a first coupling (see Exhibit A, Figs. 1 and 2) for connecting the motor to a first end portion of the ball spline unit, and a second coupling (10), a universal joint, for connecting a second end portion of the ball spline unit (8) to the rotation shaft unit (11).

Re claims 3 and 12, the first coupling is connected between the motor and the ball spline nut (Fig. 1).

Re claims 4, 13, and 14, the second coupling is designed to maintain a predetermined distance between the second end of the ball spline shaft (8) and the rotation shaft unit (11).

Re claims 5, 8, and 11, a bearing (4) being substantially mounted on the ball spline unit via a rotating shaft (3) to align the rotation axis of the motor and the rotational axis of the ball spline unit, capable of restricting the rotation radius of the rotations shaft unit (11) and allowing the ball spline unit (6,8) to rotate.

Re claim 10, figure 1 of the Japanese Patent clearly shows the first end of the ball spline unit comprises a ball spline nut (7) and the second end of the ball spline unit comprises a splined shaft (8). It is pointed out that the Japanese Patent device discloses all the structural limitations and is configured or capable of performing the recited functional limitations.

6. Claims 1-14, as best understood, are rejected under 35 U.S.C. 102(b) as being anticipated by Kaiser, Jr. et al. (5,741,174).

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Kaiser, Jr. et al. (5,741,174) discloses a rotary device comprising a rotation unit, or a motor (212) (see Fig. 9) configured for generating a rotary force and transmitting the rotatory force; a ball spline unit (7,8) having a ball spline nut (238) and a spline shaft (242) (see Fig. 9) configured for performing a rotation movement and a reciprocation movement by the rotary force generated from the motor; a rotation shaft unit comprising a rotation shaft (242,246), wherein the rotation shaft unit is configured to be moved in a horizontal direction; and a plurality of couplings (214 and 240) configured for transmitting the rotary force of the rotation central axis to the ball spline unit and for transmitting a rotary force of the ball spline unit to the rotation shaft unit (242).

Re claims 2 and 6, Kaiser, Jr. et al. (5,741,174) shows a first coupling (214) (see Fig. 9) for connecting the motor to a first end portion of the ball spline unit, and a ball splined nut (240), which can be considered as a second coupling, for connecting a second end portion of the ball spline unit (238,242) to the rotation shaft unit (242,246).

Re claims 3 and 12, Kaiser, Jr. et al. (5,741,174) shows that the first coupling (214) is connected between the motor (212) and the ball spline nut (238) (Fig. 9).

Re claims 4 and 13, Kaiser, Jr. et al. (5,741,174) shows that the second coupling (240) is designed to maintain a predetermined distance between the second end of the ball spline shaft (242) and the rotation shaft unit (242).

Re claims 5,8, and 11, Kaiser, Jr. et al. (5,741,174) shows a bearing (224) being substantially mounted on the ball spline unit via a rotating shaft (222) to align the rotation axis of the motor and the rotational axis of the ball spline unit, capable of restricting the rotation radius of the rotations shaft unit (242) and allowing the ball spline unit (242) to rotate.

Re claim 14, Kaiser, Jr. et al. (5,741,174) shows that the second coupling (240) is capable of allowing the rotation shaft (242) to be detached from the ball spline unit by unscrewing from a stationary member (195). It is pointed out that Kaiser, Jr. et al. (5,741,174) discloses all the structural limitations and is configured or capable of performing the recited functions.

7. Claims 1,5-9,13, and 14, as best understood, are rejected under 35 U.S.C. 102(b) as being anticipated by Asai et al. (6,012,222).

Asai et al. (6,012,222) discloses a parts suction head of a surface mount device comprising a z-axis motor (44) (Fig. 4) to rotate a ball screw (38) allowing a lift (28) (Fig. 2) and a theta  $\theta$ -axis motor (76) (Fig. 4) configured to cause a gear wheel (74) configured to generate a rotary force and transmit the rotary force with respect to a central axis; a ball spline unit (84,118,126) configured for performing a rotation movement and a reciprocation movement by the rotary force generated from the motors; a rotation shaft unit comprising a rotation shaft (152), wherein the rotation shaft unit is configured to be moved in a vertical direction; and a plurality of couplings (see below) configured for transmitting the rotary force of the rotation central axis to the ball spline unit and for transmitting a rotary force of the ball spline unit to the rotation shaft unit.

Re claim 6, Asai et al. (6,012,222) also shows a gear wheel (74), which is a rotary unit, configured to generate a rotary force and transmit the rotary force with respect to a central axis; a rotary member (52) and a rotary bolt (88), which can be considered as a first coupling that rotatably and substantially couples to the rotation unit (74) to a substantially first end or the upper end of the support shaft (84) of the ball spline unit; and a cylinder suction pipe holder assembly (150), which can be considered as a second

coupling, that rotationally couples a second end of the ball spline unit (126) to the rotation shaft (152).

It is pointed out that Asai et al. (6,012,222), as broadly recited, discloses all the structural limitations and is configured for or capable of performing the recited functions.

Re claim 7, Asai et al. (6,012,222) also shows the rotation unit comprising a motor (44,76) (Fig. 4).

Re claims 5,8,9, and 11, Asai et al. (6,012,222) further shows a bearing (54, 56) (Fig. 2) being substantially mounted on the ball spline unit (84,118,126) to align the rotation axis of the rotation unit (74) and the rotational axis of the ball spline unit, capable of restricting the rotation radius of the rotations shaft unit (152) and allowing the ball spline unit to rotate.

Re claim 13, Asai et al. (6,012,222) shows that the second coupling (150) is configured to separate a lower end of the ball spline unit from an upper end of the rotation shaft (152) at a predetermined distance.

Re claim 14, the second coupling (150) of Asai et al. (6,012,222) is capable of allowing the rotation shaft (152) to be detached from the ball spline unit.

### ***Response to Arguments***

8. The amendment filed September 8, 2004, and the arguments (on the Asai's reference) presented therewith have been carefully considered. The arguments on the coupling (98) of Asai's device are persuasive. However, the arguments on the suction pipe holder (150), which can be considered as a second coupling, are not persuasive.

Applicant argues that "Asai does not disclose or suggest that the suction pipe holder 150 transmits a rotary force from the ball spline 126 to the suction pipe 152" (the second paragraph of page 3). The argument is not persuasive because none of the claims does



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not recite specifically or distinctly the above limitation, i.e. "a second coupling transmitting a rotary force from the ball spline to the rotary shaft unit." Claim 1 recites in lines 8-10 stating

"a plurality of coupling configured for transmitting the rotary force of the rotation central axis to the ball spline unit and for transmitting a rotary force of the ball spline unit to the rotation shaft unit".

The applicant merely recites the function limitation of "for transmitting a rotary force of the ball spline unit to the rotation shaft unit". It is pointed out that the rotary shaft (152) is fit in the cylindrical holder (158) (Col 12, lines 30-42) and the rotating cylindrical suction pipe holder 150 would substantially transmit the rotary force from the ball spline to the cylinder suction pipe 152 since the structures are rotating together. The suction pipe 152 would not rotate if the cylinder suction pipe 152 does not transmit a rotary force. Therefore, Asai's device is capable of performing the recited function.

### ***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PAUL T. CHIN whose telephone number is (703) 305-1524. The examiner can normally be reached on MON-THURS (7:30 -6:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, EILEEN LILLIS can be reached on (703) 308-3248. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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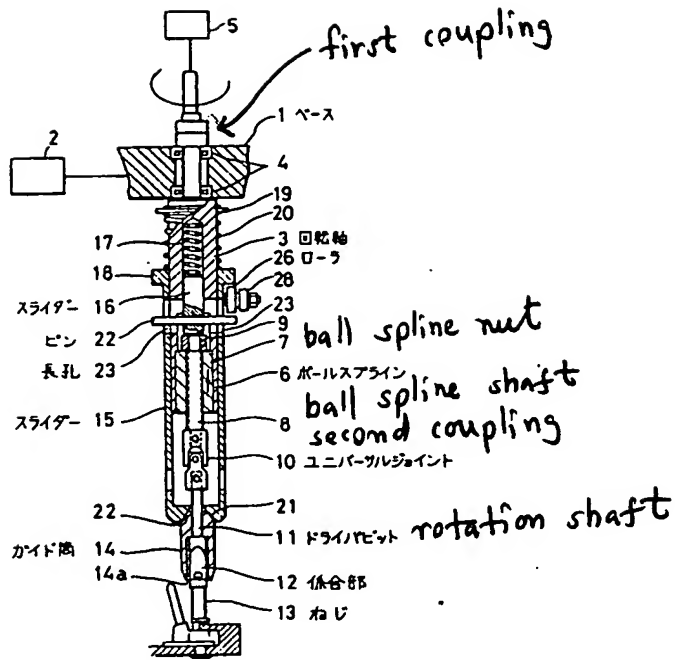
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A handwritten signature in black ink, appearing to read "Paul Chin", with a stylized flourish at the end.

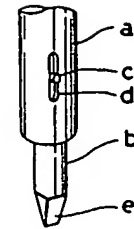
PAUL T. CHIN  
Examiner  
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## Exhibit A

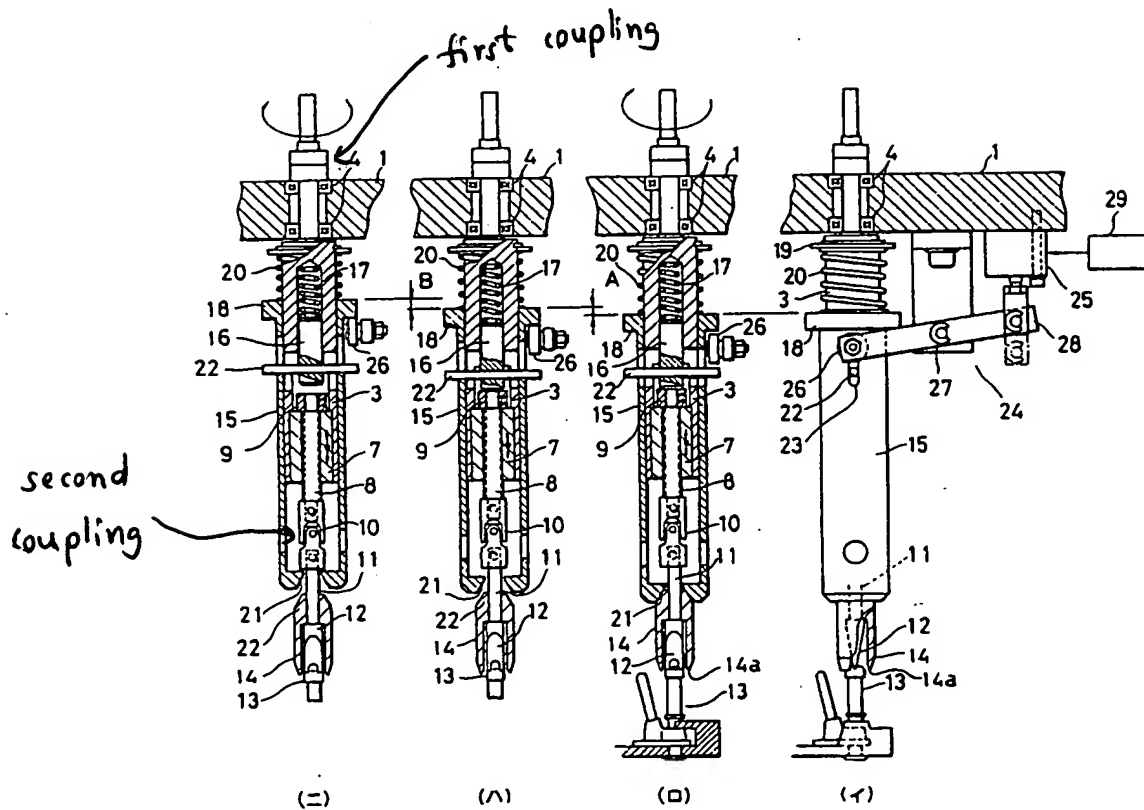
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第 1 図



第 3 図



第 2 図